

The diagram shows a cross-section of a semiconductor device. At the base is an "n+ GaAs SUBSTRATE" labeled 14. Above it are several thin layers: a top layer of Au 20, followed by a layer of Al<sub>0.15</sub>Ga<sub>0.25</sub>As 24, another layer of Au 22, and a final thin layer of n++ material 18. A central portion of the device is designated as the "NARROW ACTIVE REGION (-10 μm)" 16, which extends through the AlGaAs and Au layers down to the substrate. This region is flanked by n++ regions 12.

FIG. 3A

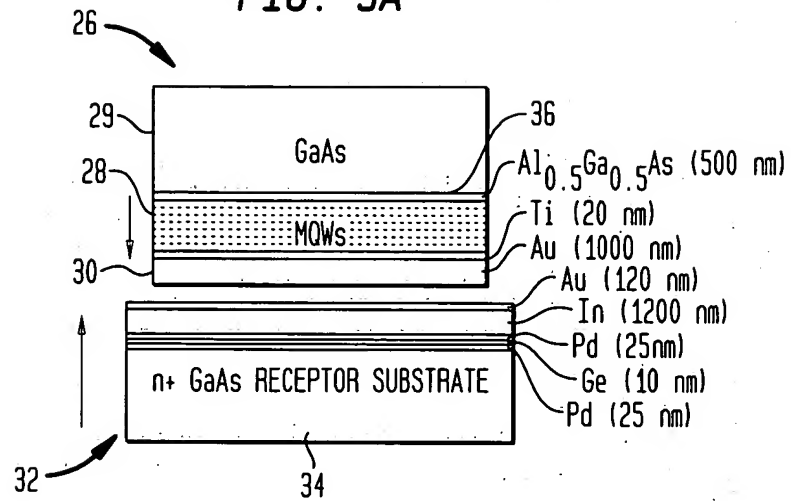


FIG. 3B

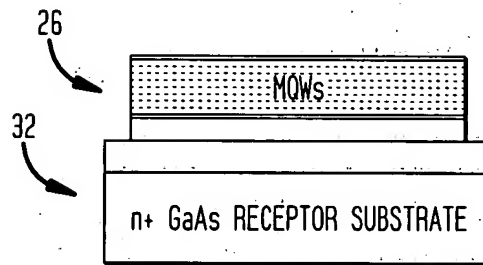


FIG. 3C

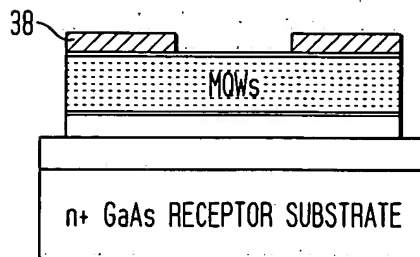


FIG. 3D

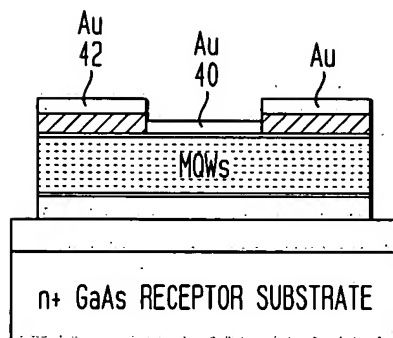
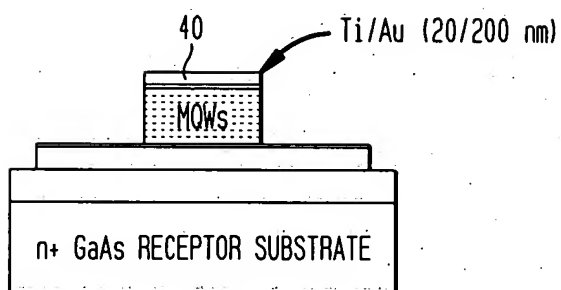
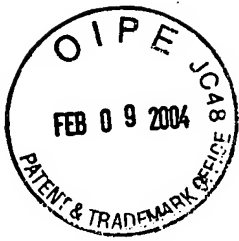


FIG. 3E





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FIG. 4A

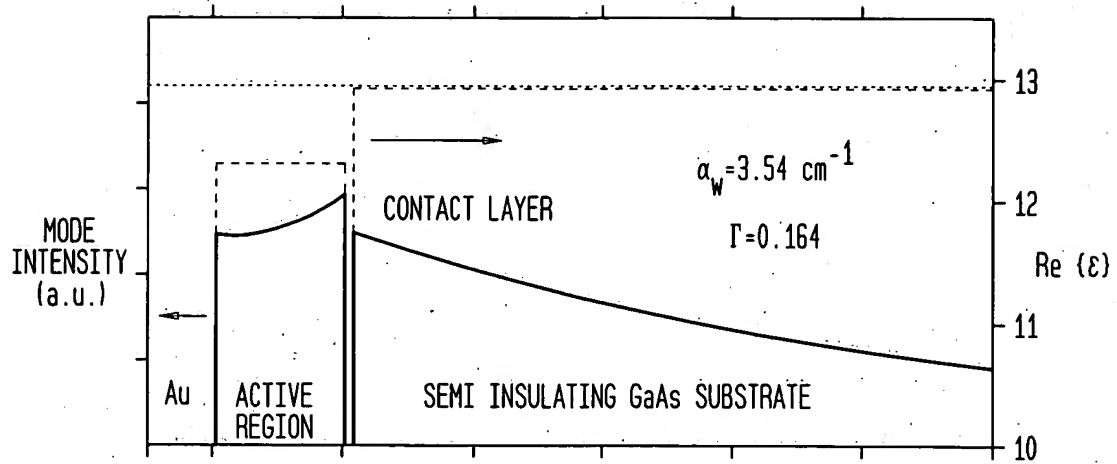
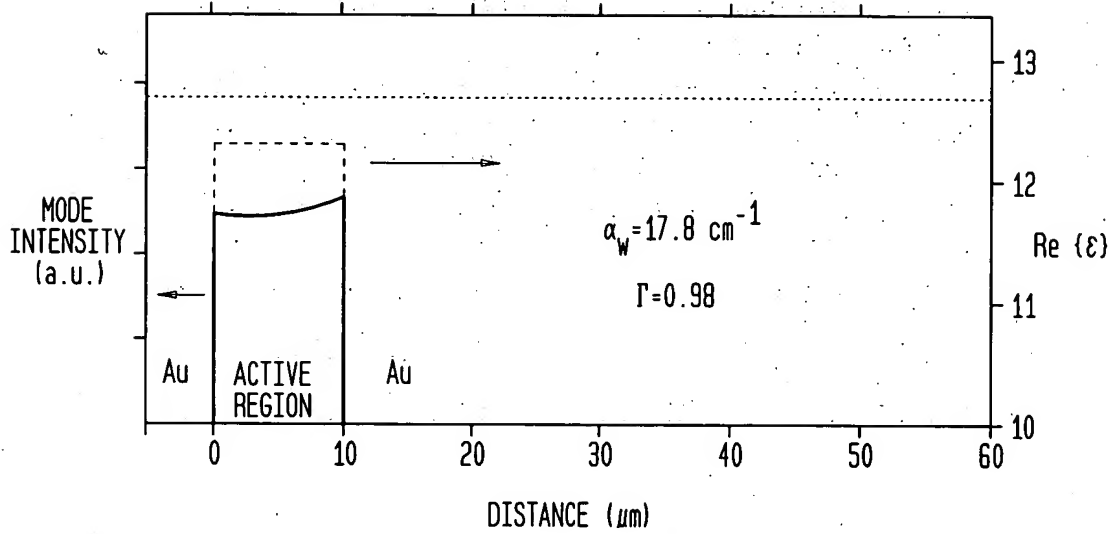


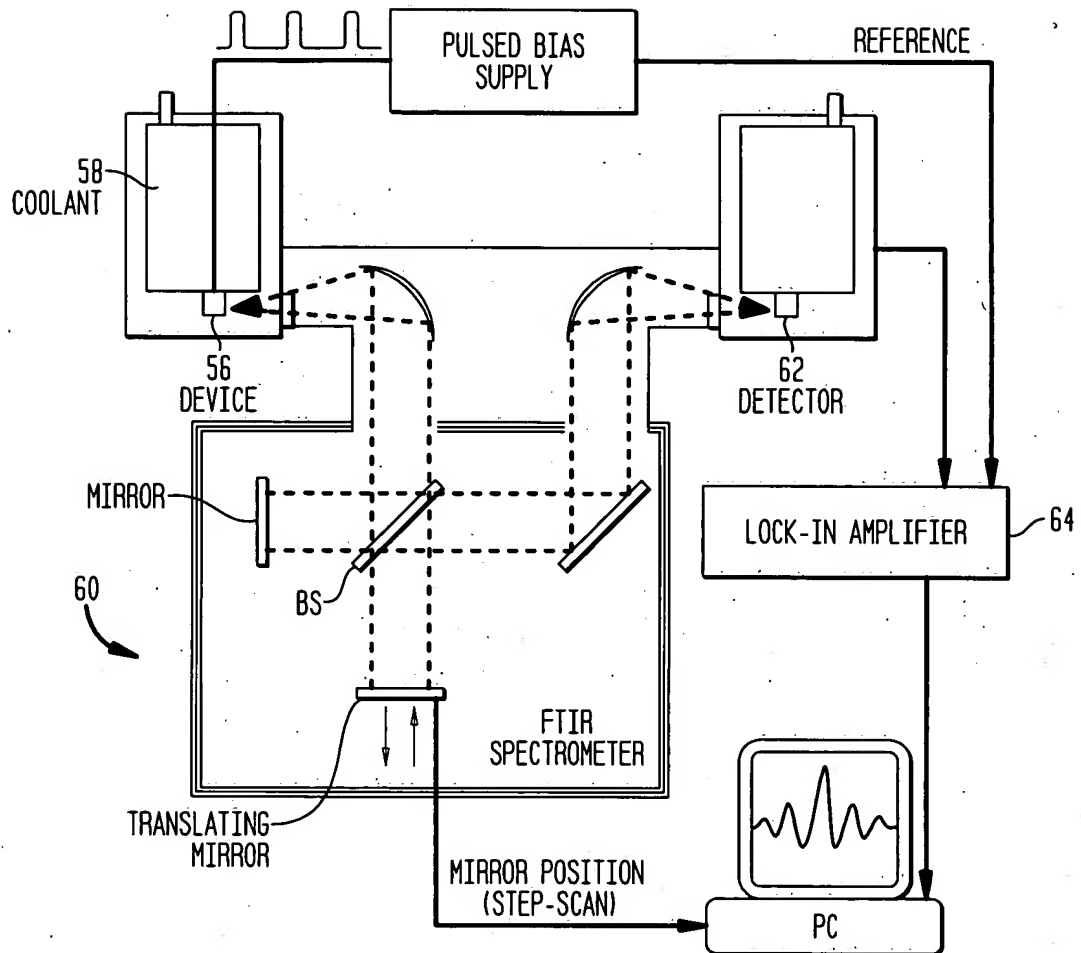
FIG. 4B

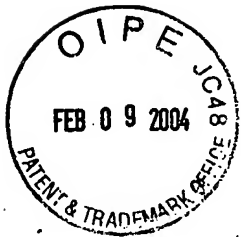




The diagram illustrates a quantum device structure and its energy levels. The structure is shown in a perspective view, with a dashed line indicating a cross-section. The structure consists of a series of rectangular blocks (46) and a central region (44) containing a quantum well (48) and a quantum dot (50). The energy levels are labeled E1 through E5, with E1 being the lowest and E5 the highest. The energy difference between E1 and E2 is 39.3 meV. The energy of the quantum dot is E54 = 13.2 meV, and the energy of the quantum well is E54 = 13.2 meV. The energy difference between E54 and E5 is 0.94 eV. The energy difference between E54 and E4 is 6.5 nm. The energy difference between E54 and E3 is 6.5 nm. The energy difference between E54 and E2 is 6.5 nm. The energy difference between E54 and E1 is 6.5 nm. The energy difference between E54 and E0 is 6.5 nm.

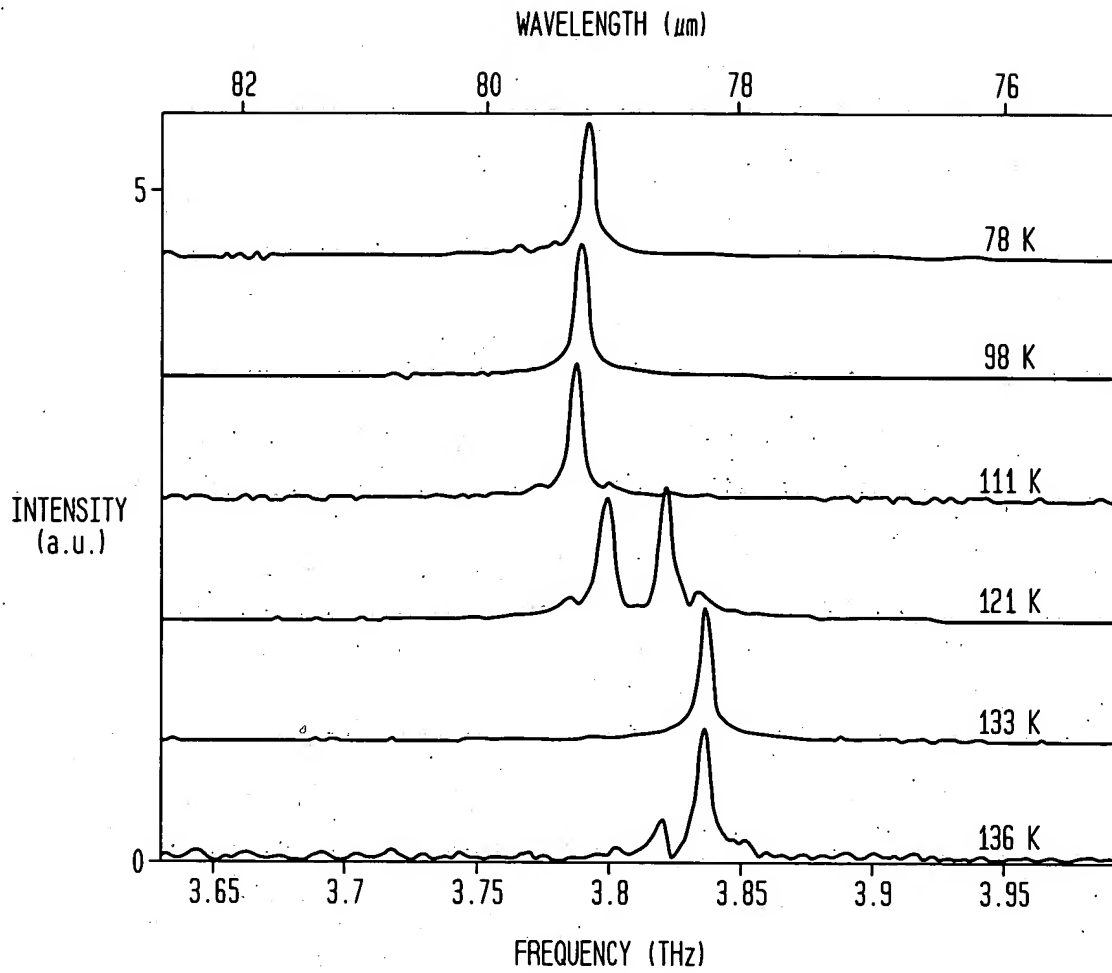
FIG. 6



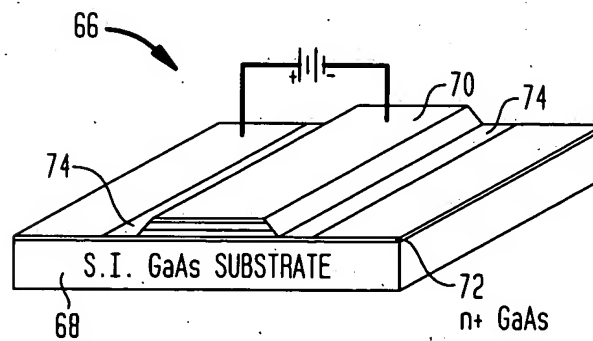


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**FIG. 7**



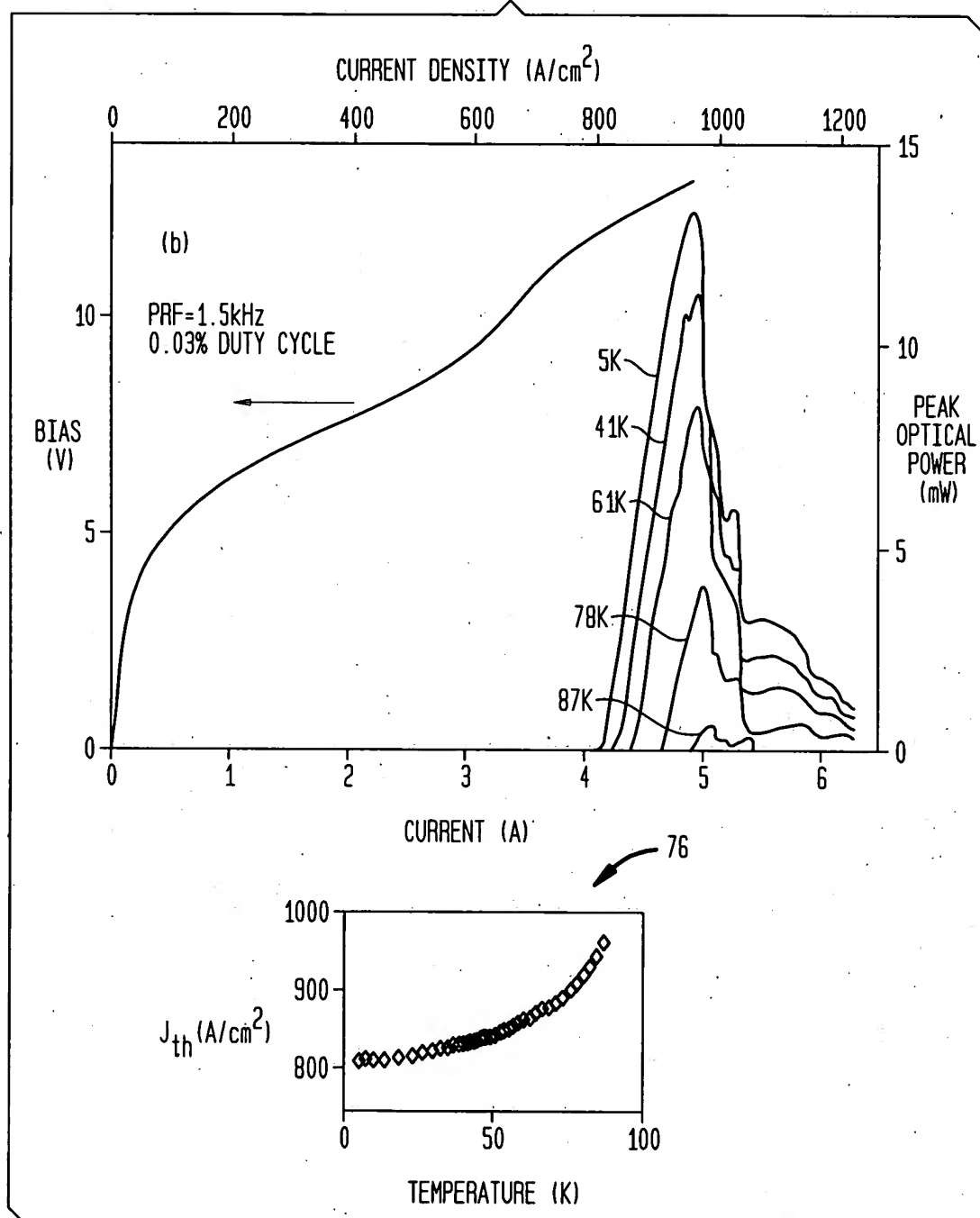
**FIG. 8**





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FIG. 9







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FIG. 10

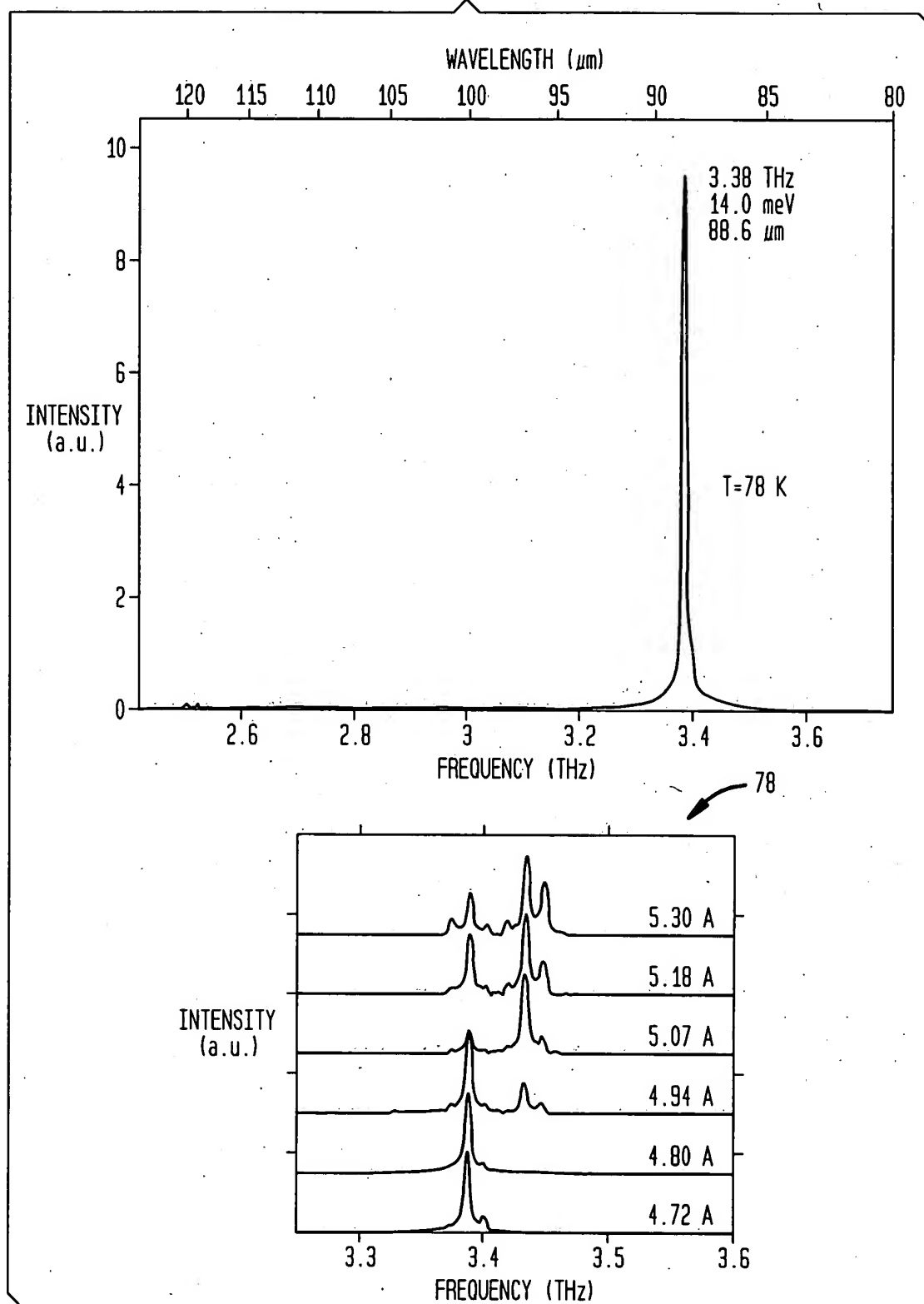


FIG. 11

